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09/990,635	11/21/2001	Hemasiri Vithana	4351-2US1	3689

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EXAMINER	
RAO, SHRINIVAS H	

ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 07/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/990,635	VITHANA, HEMASIRI	
	Examiner	Art Unit	
	Steven H. Rao	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-16,924 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) 1-16,924 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/19 &06/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendment

Applicants' amendment of January 26, 2004 has been entered and forwarded to the examiner on June 20, 2004.

Therefore claims 15and 22 as amended and claims 1-14,16-21,23-26 and 42-45 as recited in the amendment are currently pending I the Application. Claims 27-41 have been cancelled.

Information Disclosure Statement

The Ids filed on February 19, 2002 and June 06, 2003 have been considered and initialed on July 21, 2004 and a copy of the initialed PTO-1449 enclosed herewith.

Election/Restrictions

Applicant's election without traverse of claims 1-26 and 41-45 in the reply filed on Jan. 26, 2004 is acknowledged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8,10,14-26,42 and 44 rejected under 35 U.S.C. 102(b) as being anticipated by Conner et al. (U.S. Patent No. 5,124, 818, herein after Conner). (The previous rejction is maintained and repeated here , for response to Applicants' contentions see section below).

With respect to claims 1, 42 Conner describes liquid crystal display system comprising:

(a) a liquid crystal display comprising: (Conner title)

(al) a liquid crystal material; (Conner abstract line 2)

(a2) a first orientation layer to impart a first orientation direction to a first region of the liquid crystal material; (Conner col. 9 lines 20-25) and

(a3) a second orientation layer to impart a second orientation direction to a second region of the liquid crystal material; (Conner col. 9 Table 11)

(b) a light source; (Conner Figure 16, etc.)

(c) a viewing display optically coupled to receive light from the liquid crystal display; (Conner figs. 19-24) and

(d) wherein:

(dl) the liquid crystal display is optically coupled to the light source (figure 16) and is operable to receive incoming light, wherein the incoming light is polarized and has a polarization direction relative to the liquid crystal display; and

(d2) the first orientation direction and the second orientation direction are each rotationally offset from an optical mode of the liquid crystal display in which the polarization direction of the incoming light bisects a twist angle defined by the first orientation direction and the second orientation direction.

The limitations, " is operable to receive incoming light, wherein the incoming light is

polarized and has a polarization direction relative to the liquid crystal display;

and

(d2) the first orientation direction and the second orientation direction are each rotationally offset from an optical mode of the liquid crystal display in which the polarization direction of the incoming light bisects a twist angle defined by the first orientation direction and the second orientation direction. " is taken to be product-by –process limitations and are not limiting. A product by process claim is directed to the product per se, no matter how actually made. See In re fessman, 180 USPQ 324, 326 (CCPA 1974); In re Marosi et al. , 218 USPQ 289, 292 (Fed. Cir. 1983) and particularly In re Thrope, 227 USPQ 964, 966 (Fed. Cir. 1985) all of which make it clear that it is the patentability of the final structure of the product" gleaned" from the process steps, which must be determined in a " product by process" claim, and not the patentability of the process . See MPEP 2113. More ever, an old or obvious product produced by a new method is not a patentable product, whether claimed in " product by process" claims or not. In re brown, 173 USPQ 685(CCPA 1972).

With respect to claims 2 , 44 Conner describes the liquid crystal display system of claim 1 wherein the liquid crystal display is a first liquid crystal display and the polarization direction is a first polarization direction, and further comprising

(a) a second liquid crystal display comprising:

(al) a liquid crystal material; (Conner col. 9 lines 20-25)

(a2) a first orientation layer to impart a first orientation direction to a first region of the liquid crystal material; and (Conner Table 11).

(a3) a second orientation layer to impart a second orientation direction to a second region of the liquid crystal material; and

(b) wherein:

(bl) the first liquid crystal display is adapted to receive a first color light component; (Conner Table 2e.g. Magenta)

(b2) the second liquid crystal display is optically coupled to the light source and is adapted to receive a second color light component; (Conner Table 2 e.g. Yellow)

(b3) the second color light component has a second polarization direction relative to the second liquid crystal display that is substantially the same as the first polarization direction relative to the first liquid crystal display; (Conner figure 41)

(b4) the viewing display is further optically coupled to receive at least a portion of the second color light component from the second liquid crystal display; and

(b5) the first orientation direction and the second orientation direction of the second liquid crystal display are each rotationally offset from an optical mode of the second liquid crystal display in which the second polarization direction bisects a second twist angle defined by the first orientation direction and the second orientation direction of the second liquid crystal display.

The limitations "(b4) the viewing display is further optically coupled to receive at least a portion of the second color light component from the second liquid crystal display; and

(b5) the first orientation direction and the second orientation direction of the second liquid crystal display are each rotationally offset from an optical mode of the second liquid crystal display in which the second polarization direction bisects a second twist angle defined by the first orientation direction and the second orientation direction of the second liquid crystal display " is taken to a product by process limitation and are not limiting .

With respect to claim 3 the liquid crystal display system of claim 2 further comprising a color splitter, optically coupled between the light source and the first and second liquid crystal displays, to selectively provide the first color light component and the second color light component. (Conner figure 41) .

With respect to claim 4 the liquid crystal display system of claim 3 further comprising a polarizing beam splitter optically coupled between the light source and the color splitter, wherein the polarizing beam splitter provides light comprising the first color component and the second color component in a polarized form. (Conner col.12 lines 20-40).

With respect to claim 5. the liquid crystal display system of claim 2 fiuther comprising:

(a) a third liquid crystal display comprising: (Conner col. 9 lines 20-25)

(al) a liquid crystal material;

(a2) a first orientation layer to impart a first orientation direction to a first region of the liquid crystal material; and

(a3) a second orientation layer to impart a second orientation direction to a second region of the liquid crystal material; and

(b) wherein:

(bl) the third liquid crystal display is optically coupled to the light source and is adapted to receive a third color light component;

(b2) the third color light component (Conner Cyan , Table 2) has a third polarization direction relative to the third liquid crystal display that is substantially the same as the first polarization direction relative to the first liquid crystal display;

(b3) the viewing display is further optically coupled to receive at least a portion of the third color light component from the third liquid crystal display; and (rejected for same reasons as set out under claims 1and 2 above).

(b4) the first orientation direction and the second orientation direction of the third liquid crystal display are each rotationally offset from an optical mode of the third liquid crystal display in which the polarization direction bisects a third twist angle defined by the first orientation direction and the second orientation direction of the third liquid crystal display.

The limitations ,"(b5) the first orientation direction and the second orientation direction of the third liquid crystal display are each rotationally offset from an optical mode of the second liquid crystal display in which the second polarization direction bisects a second twist angle defined by the first orientation direction and the second orientation direction of the second liquid crystal display " is taken to be a product by process limitation and are not limiting .

With respect to claims 6, 10 . The liquid crystal display system of claim 5 wherein:

the first orientation direction and the second orientation direction of the first liquid crystal display are each rotationally offset by a first offset angle;
the first orientation direction and the second orientation direction of the second liquid crystal display are each rotationally offset by a second offset angle;
the first color light component corresponds to red light; (Conner figure 43, Table Iv, etc.) the second color light component corresponds to green light; col. 12 line 43)
the first offset angle is greater than the second offset angle; (Conner col. 34 line 64-col. 25 line 10, col. 9 lines 24-25) the first orientation direction and the second orientation direction of the third liquid crystal display are each rotationally offset by a third offset angle; the third color light component corresponds to blue light; and the third offset angle is between the first offset angle and the second offset angle. (Conner Table 11).

The limitation first , second and third orientation directions are rationally offset by angles" is taken to be a product by process and not limiting .

With respect to claim 7. The liquid crystal display system of claim 2 wherein: the first orientation direction and the second orientation direction of the first liquid crystal display are each rotationally offset by a first offset angle; the first orientation direction and the second orientation direction of the second liquid crystal display are each rotationally offset by a second offset angle; the first offset angle corresponds to a substantial optimization of photopic contrast for a first wavelength range of light corresponding to the first color light component; and the second offset angle corresponds to a substantial optimization of photopic

contrast for a second wavelength range of light corresponding to the second color light component. (Conner Table 11, col. 9 lines 23-45).

With respect to claims 8 and 17 Conner describes the liquid crystal display system of claim 2 wherein: the first orientation direction and the second orientation direction of the first liquid crystal display are each rotationally offset by a first offset angle; the first orientation direction and the second orientation direction of the second liquid crystal display are each rotationally offset by a second offset angle; the first and second orientation layers of the first liquid crystal display are rubbed to provide the first offset angle; the first and second orientation layers of the second liquid crystal display are rubbed to provide the second offset angle; and the first offset angle and second offset angle are different. (Conner col. 9 lines 20-35) .

The limitation ," the first orientation direction and second orientation direction of the second liquid crystal display are rubbed to provide the second offset angle are rationally offset by angles" is taken to be a product by process and not limiting .

With respect to claims 14, 16 Conner describes the liquid crystal display system of claim 1 wherein the first orientation direction and the second orientation direction are offset sufficiently to improve a photopic contrast, provided by the liquid crystal display, relative to the optical mode. (title, abstract, etc.).

With respect to claim I5 to the extent understood, Conner describes display system of claim 1 wherein the first orientation direction and the second orientation direction are offset by slight rotational angles. (Conner Table 11).

With respect to claims 18 –21 Conner describes the liquid crystal display system of claim 2 further comprising a polarizing beam splitter optically coupled between the light source and the first liquid crystal display, wherein the polarizing beam splitter is operable to provide polarized light comprising the first color light component to the first liquid crystal display . (Conner col. 18 lines 15-45).

With respect to claim 22. to the extent understood, Conner describes the liquid crystal display system of claim 1 wherein the viewing display is a screen for an projected image or is a viewer for direct viewing by a user. (Conner figures 28 –30).

With respect to claims 23-26 . The liquid crystal display system of claim 1 wherein the first and second orientation directions are sufficiently rotationally offset to provide a dark state reflectivity peak amplitude reduction for the liquid crystal display of at least about 10 percent (claim 24 –35 percent) , (claim 25 to 85 percent) and (claim 26 35 to 50 percent) relative to the optical mode. (Conner col. 32 lines 37 to 59).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 9,11-13, 43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conner as applied to claims 1-8, etc. above and further in view of Melnick et al. (U.S. Patent No. 6,348,959 herein after Melnick).

With respect to claim 9. Conner describes the liquid crystal display system of claim 8,

Conner does not specifically describe or mention that the first and second offset angles are different by at least about 0.5 degrees.

However , Melnick describes in col. 6 lines 60-62 describes the first and second offset angles are different by at least about 0.66 degrees to provide a display device having a high degree of light extinction, low light absorption and the critical alignment of the passive plate is not required.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Melnick's specified difference between the first and second offset angles by at least about 0.5 degrees for Conner's unspecified difference between the first and second offset angles . The motivation for the above inclusion is to provide a display device having a high

degree of light extinction, low light absorption and the critical alignment of the passive plate is not required.

With respect to claim 11. The liquid crystal display system of claim 1 wherein the first orientation direction and the second orientation direction are each rotationally offset by substantially the same rotational angle. (Melnick figure 5).

With respect to claim 12. The liquid crystal display system of claim 11 wherein the rotational angle is greater than about 0.5 degrees and less than about 10 degrees. (Melnick col. 3 line 66)

With respect to claim 13. The liquid crystal display system of claim 11 wherein the rotational angle is less than about 5 degrees.(Melnick col. 3 lines 50-55)

With respect to claim 43. The liquid crystal display system of claim 42 wherein the first orientation direction and the second orientation direction are each rotationally offset by less than about 10 degrees.

With respect to claim 45, describes The liquid crystal display system of claim 44 wherein the first orientation direction and the second orientation direction are each rotationally offset by less than about 10 degrees.

Response to Arguments

Applicant's arguments filed January 26, 2004 have been fully considered but they are not persuasive. for the following reasons :

Applicants' first contention that Conner does not explicitly discuss the imparting of an orientation direction to liquid crystal material is not persuasive

because unless the liquid crystal material is oriented in a particular direction an LCD image will not be formed and Connor describes forming an LCD image.

Applicants' second contention that the phrase " operable to receive incoming light " may or may not be functional limitation and not a product by process limitation is not relevant because this argument fials to address the following product by process limitations.

The limitations "(b4) the viewing display is further optically coupled to receive at least a portion of the second color light component from the second liquid crystal display; and

(b5) the first orientation direction and the second orientation direction of the second liquid crystal display are each rotationally offset from an optical mode of the second liquid crystal display in which the second polarization direction bisects a second twist angle defined by the first orientation direction and the second orientation direction of the second liquid crystal display " is taken to a product by process limitation and are not limiting .

All the structural limitations have been considered.

Claims 42 and 44 were alleged to be allowable for the same reasons as claim 1 , however as seen above claim1 is not allowable, therefore claims 42 and 44 are also not allowable.

Applicants contention that Melnick does not describe rotational offset of the orientation directions is not persuasive because without rotational offset the LCD image will not formed and as the applied primary reference Conner

describes the rotational Offset with improvement of photopic contrast , it is redundant for the secondary reference Melnick to also describe it.

Therefore all of Applicants' arguments are not persuasive.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Steven H. Rao whose telephone number is (703) 306-5945. The examiner can normally be reached on Monday- Friday from approximately 7:00 a.m. to 5:30 p.m.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956. The Group facsimile number is (703) 308-7724.

Steven H. Rao

Patent Examiner

July 23, 2004.

SPE 2814